

REMARKS

Claims 1-2 and 6-16 remain pending after amendment.

Claim Amendments

Claims 3-5 are cancelled and the limitations thereof added to claim 1. Support for the amendment of claim 1 also resides at page 13, line 22 and the Examples of the specification. No new matter is added by this amendment.

Restriction Requirement

Applicants confirm the prior election of the subject matter of claims 1-7 in response to the restriction requirement of the Examiner. Applicants also note that Group II is stated to include claims 8-13 and 15, when it appears that Group II should include claims 8-13 and 16. Confirmation on this point would be appreciated. Claims 8-16 now stand withdrawn from consideration.

Rejection under 35 USC 103(a)

Claims 1-7 stand rejected under 35 USC 103(a) as being unpatentable over Atsushi JP '097 in view of Hiroyuki JP '043. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In support of the rejection, the Examiner takes the position that it would have been obvious to incorporate the release agent of Hiroyuki in the composition of Atsushi to yield the claimed invention

in order to prevent sticking during processing or to improve storage capacity of the composition.

In response, claim 1 is amended in an attempt to more clearly define over the cited prior art by:

(1) specifying the non-ether-series hydrophilic polymer as comprising a cellulose derivative and/or a homo- or copolymer of vinylpyrrolidone.

(2) specifying the ether-series hydrophilic polymer as comprising a polyoxyethylene-polyoxypropylene block copolymer and/or a nonionic surfactant having an oxyethylene unit, and

(3) specifying the silicone oil as being in the form of a silicone emulsion present in a specific proportion.

The now-claimed invention is neither disclosed nor suggested by the cited prior art.

Atsushi is directed to a surface treatment for a coated polymer film. The reference defines the disclosed finishing agent at claim 1 as containing sucrose fatty acid ester, a silicone emulsion, and a polysaccharide and/or a hydrophilic macromolecule (except for polyvinyl alcohol).

Regarding the hydrophilic macromolecule, Atsushi states:

“As a monomer which has hydroxyl, hydroxyalkyl acrylate, such as 2-hydroxyethyl acrylate and 2-hydroxypropyl acrylate, the hydroxyalkyl methacrylate corresponding to these, polyethylene-glycol mono(meth)acrylate, etc. are mentioned, for example.” (paragraph [0033])

and

“A water soluble polymer or a water-dispersion macromolecule, especially a water soluble polymer are contained in a desirable hydrophilic macromolecule. It is the macromolecule with which a principal chain does not have hydrophilic groups, such as a ether group, but especially desirable hydrophilic macromolecules are

hydrophobicity, such as an alkylene group, and have hydrophilic groups, such as an ester group, an ether group, and a basic nitrogen atom, in a side chain.” (paragraph [0039])

Further, with regard to the amount of a silicone emulsion, the reference states:

“For example, the ratio of a silicone emulsion as solid content is 20-1000 parts by weight, preferably 50-500 parts by weight, more preferably 100-300 parts by weight relative to 100 parts by weight of the sucrose fatty acid ester.” (paragraph [0043])

Furthermore, in regard to the amount of polysaccharide present, the reference states:

“moreover, the ratio of polysaccharide is 10-1000 parts by weight, preferably 15-500 parts by weight, more preferably 30-250 parts by weight.” (paragraph [0044])

Regarding advantages resulting from the disclosed invention, the reference states:

“It continues not only at the first stage but at a long period of time, and high fog resistance and blocking resistance can be given.” (paragraph [0087])

The additionally-cited Hiroyuki reference is directed to a fog-resistant sheet which is coated with a fog-resistant agent on one side and a release agent on the other side.

The Hiroyuki reference summarizes the disclosed invention as follows:

“The styrene resin antifog sheet that one front side is coated by an antifogger and the opposite side is coated by a release agent, wherein the antifogger comprises the following (A), (B) and (C) components, and the releasing agent comprises the following (B) component, (A) at least one fatty acid ester selected from the group consisting of a sucrose fatty acid ester and a polyglyceric fatty acid ester., (B) an ether polymer, and (C) a polyvinyl alcohol.” (claim 1)

Regarding the ether polymer, Hiroyuki states:

“Polyglycerin (more than diglycerol), a polyethylene glycol, a polypropylene glycol, a polyoxyethylene polyoxypropylene block copolymer, etc. are mentioned to a desirable ether system polymer. For a certain reason, the effectiveness as a slipping agent and a release agent of these ether system polymer is also desirable in

the effectiveness of improving low-temperature antifog one as a fog resistance amelioration assistant. They are a polyoxyethylene polyoxypropylene block copolymer and a polyethylene glycol among these especially preferably. When a polyoxyethylene polyoxypropylene block copolymer and a polyethylene glycol are selected as an ether system polymer (B), it is especially desirable in order to give the sheet and secondary mold goods which excelled conventionally the well-known sheet with which SHIRIKO oil (dimethylpolysiloxane) was covered as a release agent in the appearance (transparency, gloss) in many cases.” (paragraph [0022])

Further, with regard to the use of silicone oil, Hiroyuki states:

“Conventionally furthermore, the well-known low temperature of a styrene resin sheet and the well-known lack of fog resistance in an elevated temperature. The silicone oil (dimethylpolysiloxane, diphenyl polysiloxane, etc.) which is an antifogger and a release agent is mixed, and it applies to a sheet (for example, sheet given in JP 63-62538,B). Or the thing which what (for example, sheet given in JP 9-295384,A) silicone oil imprints on an antifogger has influenced greatly when a sheet is rolled round in the shape of a roll. That is, it found out a header and an ether system polymer having [that silicone oil has had a bad influence on fog resistance, and] a release agent operation of a styrene system sheet, and not worsening fog resistance.”(paragraph [0008])

* * * *

“the silicone oil insoluble in water, such as dimethylpolysiloxane and a diphenyl polysiloxane, of adding to an antifogger constituent is not desirable in order to check fog resistance remarkably.” (paragraph [0033])

In Comparative Example 6, the antifog layer (side) comprises a polyglyceryl fatty acid ester (A-1), a polyoxyethylene polyoxypropylene block copolymer (B-1), a polyvinyl alcohol (C-1) and a dimethylpolysiloxane emulsion (E-3).

Regarding advantages provided by the disclosed invention, the reference states:

“The antifogger of a specific presentation is covered by one front face of this invention, and especially secondary shaping containers that consist of the sheet and this sheet with which the release agent which uses an ether system polymer as an

indispensable component was covered have the description excellent in the mold-release characteristic of low-temperature fog resistance, a sheet, and secondary sheet mold goods in an opposite side. For this reason, it can be suitably used as various shaping containers and a sheet for container shaping, including the object for food packing which needs the outstanding low-temperature fog resistance.” (paragraph [0084])

It is clear from the above that the cited references fail to disclose or suggest a combination of a polyhydric alcohol fatty acid ester, the recited non-ether-series hydrophilic polymer, the recited ether-series hydrophilic polymer and a silicone emulsion in the amount specified.

Although Atsushi describes a monomer having a hydroxyl group such as a polyethylene-glycol mono(meth)acrylate or a hydrophilic group as a side chain, Atsushi fails to teach or suggest an embodiment wherein both the polyoxyethylene-polyoxypropylene block copolymer and the nonionic surfactant having an oxyethylene unit are present.

Further, Atsushi describes that ratio of a silicone emulsion based on solids content as being 20-1000 parts by weight relative to 100 parts by weight of the sucrose fatty acid ester. However, in Atsushi, the more preferred ratio of the silicone emulsion is 100-300 parts by weight relative to 100 parts by weight of the sucrose fatty acid ester. Further, a silicone emulsion in an amount of 75-150 parts by weight relative to 100 parts by weight of the sucrose fatty acid ester is used in the Examples. That is, reducing the amount of the silicone oil by use of a specific ether-series hydrophilic polymer (as undertaken by applicants) would never be predicted from the teachings of Atsushi..

With regard to Hiroyuki, a polyvinyl alcohol (which is not present in the present invention) is an essential component. Hiroyuki also fails to disclose either of a cellulose derivative

and a homo- or copolymer of vinylpyrrolidone. Furthermore, Hiroyuki teaches away from the use of silicone oil (paragraphs [0008] and [0033] and Comparative Example 6 of Hiroyuki). Incidentally, in Comparative Example 6 of Hiroyuki, although a polyvinyl alcohol is combined with a silicone emulsion, the emulsion is destroyed by the presence of polyvinyl alcohol. Such a result would be inconsistent with applicants' claims which provide for the silicone oil to be present in the form of an emulsion.

Moreover, while Atsushi excludes a polyvinyl alcohol and requires a silicone emulsion as an essential component, Hiroyuki requires a polyvinyl alcohol as essential component and excludes the silicone oil. Since both references are accordingly incompatible with respect to their respective essential components, as well as the components that are excluded, there is no reasonable basis to combine the respective teachings in an attempt to arrive at the claimed invention.

Further, even if Atsushi is combined with Hiroyuki, since both of the references fail to teach or suggest the specific ether-series hydrophilic polymer used together with the silicone emulsion, the combination of all elements of the claimed invention could not be predicted from the teachings of the cited references.

The present invention also provides unexpected advantages. That is, since the surface-treating composition of Atsushi comprises a sucrose fatty acid ester, a hydrophilic polymer and a large amount of silicone emulsion, the composition of Atsushi corresponds to the composition of Comparative Example 4 of the present description. As is apparent from Table 2 of the specification, the sheet (Comparative Example 4) does not exhibit excellent antistatic, heat stability and anti-fogging properties

for the shaped articles. In particular, since the amount of the silicone emulsion is large, the surface-treating composition of Atsushi cannot maintain high anti-fogging properties in addition to improving mold releasing or anti-blocking properties.

Further, since the surface-treating composition of Hiroyuki comprises a polyhydric alcohol fatty acid ester, an ether-series polymer and a polyvinyl alcohol, the composition cannot exhibit satisfactory mold releasing properties. Particularly, since the composition of Comparative Example 6 of Hiroyuki further includes a silicone emulsion, the composition corresponds to the composition of Comparative Example 5 of the specification. As is apparent from Table 2 of the present specification, the sheet (Comparative Example 5) does not exhibit excellent antistatic, heat stability and anti-fogging properties of the shaped articles.

On the other hand, according to the present invention, the combination of the recited components significantly improves anti-fogging properties (high temperature anti-fogging property and low temperature anti-fogging property) and anti-blocking properties. In particular, even in the case of subjecting the sheet of the present invention to roll up or heat molding, the sheet can maintain high anti-fogging properties and excellent mold-release properties. Further, a small amount of the silicone oil imparts high mold-releasing property to the sheet. The amount of stain on a molding machine can thus be reduced by use of the claimed invention.


The cited references, taken either singly or in combination, thus do not result in the claimed invention.

The rejection is accordingly without basis and should be withdrawn.

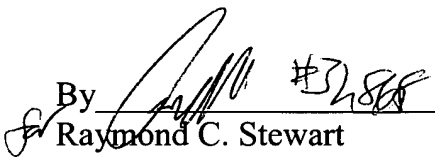
The application is now believed to be in condition for allowance, and an early indication of same earnestly is solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.


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Respectfully submitted,

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